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EXAMINER	
HUSSAIN, TAUQIR	
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2452	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,565	GOLE ET AL.	
	Examiner	Art Unit	
	TAUQIR HUSSAIN	2452	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 13-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 13-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/01/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to amendment /reconsideration filed on 10/01/2008, the amendment/reconsideration has been considered. Claims 1, 3, 5, 13, 15, 16, 20, 24, 28 and 33-35 have been amended, claims 10-12 have been canceled and claims 1-9 and 13-35 are pending for examination, the rejection cited as stated below.

Response to Arguments

2. Applicant's arguments filed on 10/01/2008 have been fully considered but they are not deemed to be persuasive. In the remarks, applicant argued in substance that

(a) Prior art "Craddock, Prakash and Pandya" does not teach "RDMA read operation bypassing the operating system".

As to point (a), Examiner respectfully disagree and points to, Pandya, Fig.10, [0101], where upper layer protocol functions carry the traffic as well as other application that can benefit from direct OS TCP/IP bypass, RDMA or network socket direct capabilities or combination thereof to utilize the high performance TCP/IP implementation of this processor, . Pandya's direct capabilities allows various application to access processor directly as Pandya further describes, an application running on an initiator or target can in certain instantiation register a region of memory, which is made available to its peer for access directly without substantial host intervention through RDMA protocol data transfer and therefore, the core concept of bypassing intermittent processing or direct access capability

in reference to RDMA protocols are already well known in the art and therefore, combination of Craddock and Pandya offer enough motivation for a person skilled in the art to modify the teachings and apply the concept in the same analogous art to attain highest level of productivity.

(b) As to arguments regarding claims 15-19, are moot in view of new grounds of rejection.

(c) As for arguments regarding independent claims 33 and 34 please see the explanation in point (a).

3. As to claim 32, Applicant's failure to adequately traverse the Examiner's assertion of Official Notice allows the relevant subject matter to now be taken as admitted prior art (see MPEP 2144.03, C, paragraph 2).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cradock et al (Pub. No.: US 2003/0061296 A1), hereinafter "Cradock" in view of Prakash et al (Patent No.: US 6434,626 B1), hereinafter "Prakash" further in view of Pandya et al. (Pub. No.: US 2004/0037319), hereinafter "Pandya".

6. As to claim 15 Craddock discloses, the invention substantially, including, (a) initiating a communication session attempting a first remote direct memory access read operation directed to a predefined hardware address and a predefined port number, the predefined hardware address and predefined port number previously known to support a RDMA operation (Craddock, Fig.1, [0135, lines 1-5], where attempt has made to read data and [0051, lines 1-13], where subnet manager is configuring physical ports and local address, which is used for read and write operations and Fig.1, [0009], where predefined is specific addresses for read and write defined before the read and write operation and further it is merely a well known teaching in the art that specific ports are used for specific traffic, e.g. http traffic go through port 80, LDP=389, Https=443, SIP=5060 etc); and

(b) performing, in response to a successful step (a), a first remote direct memory access write operation directed to the predefined hardware address and the predefined port number (Craddock, [0142, lines 1-16], where attempt has made to write data and [0051, lines 1-13], where subnet manager is configuring physical ports and local address, which is used for read and write operations).

Craddock however is silent on disclosing explicitly, "initiating a peer-to-peer communication session".

Prakash discloses, initiating a peer-to-peer communication (Prakash, Col.3, lines 22-25, where to be aware of the status of peer systems a periodic polling is done which is equivalent to initiating a peer-to-peer communication),

Therefore it would have been obvious to one of ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock with the teachings of Prakash in order to provide a cluster monitoring system which uses a multicast ISM to receive a status request message from a performance monitoring OSM and to issue multicast status request messages for the entire SAN cluster to determine healthy and unhealthy statuses of systems in a cluster.

Craddock and Prakash do not disclose, "RDMA read operation bypasses the operating system".

Pandya however discloses much of a similar concept as, RDMA read operation bypassing the operating system (Pandya, Fig.10, [0101], where upper layer protocol functions carry the traffic as well as other application that can benefit from direct OS TCP/IP, RDMA or network socket direct capabilities or combination thereof to utilize the high performance TCP/IP implementation of this processor).

Therefore, it would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock, Prakash with the teachings of Pandya in order to provide a classification of network traffic that consumes up to half of the processing cycles available on packet processors leaving few cycles for deep packet inspection and processing. IP based storage traffic by the nature of the protocol requires high speed low latency deep packet processing and therefore, implementing IP processor significantly reduces the classification overhead by providing a programmable classification engine.

7. Claim 16, is rejected for the same rationale as applied to claim 15 above.

8. As to claim 17, Craddock, Prakash and Pandya discloses, the invention substantially as in parent claim 15, including, wherein the predefined hardware address comprises a fiber channel identifier (Craddock, [0051, lines 11-13], where channel adaptor is fiber channel and configuring means it must have the reference number or MAC address could be the channel ID for configuration purposes).

9. As to claim 18, Craddock, Prakash and Pandya discloses, the invention substantially as in parent claim 15, including, wherein the predefined port number comprises a virtual interface (Craddock, [0051, lines 1-13], where VL's are virtual interface and has a unique port number assigned).

10. As to claim 19, Craddock, Prakash and Pandya discloses, the invention substantially as in parent claim 15, including, wherein the first remote direct memory access is delivered to a predefined memory address storing booting status information (Craddock, [0135, lines 1-5], where memory space is reserved for read operation and invoking can be interpret as booting).

11. Claim 1-3, 13-14 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craddock in view of Pandya et al (Pub. No.: US 2004/0037319 A1),hereinafter "Pandya"

12. As to claims 1 and 35 (method and program product), Craddock discloses the invention substantially, including, attempting a first remote direct memory access

(RDMA) read operation directed to a cluster partner having an operating system, (Craddock, Fig.1, [0135, lines 1-5], where attempt has made to read data);

performing, in response to a successful first RDMA read operation, a first RDMA write operation to the cluster partner (Craddock, [0142, lines 1-16], where attempt has made to write data).

Craddock however is silent on disclosing explicitly performing, in response to a successful RDMA write operation, a second RDMA read operation directed to the cluster partner and performing in response to a successful second RDMA read operation, a second RDMA write operation to the cluster partner or the RDMA read operation bypassing the operating system.

Pandya however discloses, a similar concept in the same analogous art as, performing, in response to a successful RDMA write operation, a second RDMA read operation directed to the cluster partner and performing in response to a successful second RDMA read operation, a second RDMA write operation to the cluster partner (Pandya, Fig.37, element-3706, 3708, [0142], where multiple read request is generated against a write command and it will be obvious therefore to repeat the read or write process according to Fig.37).

the RDMA read operation bypassing the operating system (Pandya, Fig.10, [0101], where upper layer protocol functions carry the traffic as well as other application that can benefit from direct OS TCP/IP, RDMA or network socket direct capabilities or combination thereof to utilize the high performance TCP/IP implementation of this processor).

Therefore, using the rationale for read and write step above it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock with the teaching of Pandya in order to provide classification of network traffic that consumes up to half of the processing cycles available on packet processors leaving few cycles for deep packet inspection and processing. IP based storage traffic by the nature of the protocol requires high speed low latency deep packet processing and therefore, implementing IP processor significantly reduces the classification overhead by providing a programmable classification engine.

13. As to claim 2, Craddock and Pandya discloses the invention substantially as in parent claim 1, including, wherein the step of attempting a first RDMA read operation further comprises the step of issuing a RDMA read operation to the cluster partner requesting a pre-set memory address location that is associated with a status variable on the cluster partner (Craddock, [0135, lines 1-5], where memory space is reserved for read data and [0137, lines 1-9], where details of the pre-set memory can be observed).

14. As to claim 3, Craddock and Pandya disclose the invention substantially as in parent claim 1, including, exchanging a set of peer connection information (Craddock, [0005, lines 1-4],where nodes are peer communicating with each other);

passing a set of client information to the cluster partner (Craddock, [0077, lines 3-5]);

creating a set of appropriate communication ports (Craddock, [0034, lines 8-9]);

alerting the cluster partner of a ready status (Craddock, [0132, lines 1-3], where response could be an alert message); and

alerting a set of clients that the cluster partner is in a ready state (Craddock, Fig.12, element-passive side, where communication management reply message is used to accept the connection which could be a ready status).

15. As to claim 13, is rejected for the same rationale as applied to claim 1 above and further it will be an obvious modification in a cluster environment to one of ordinary skilled in the art to distribute two operations as single operation to two machines.

16. As to claim 14, Craddock and Pandya discloses, the invention substantially as in parent claim 13, including, wherein the first remote direct memory access read operation is performed over a Virtual Interface connection having a pre-determined and pre-assigned Virtual Interface Number and a pre-determined Fiber Channel ID (Craddock, Fig.3A, [0050, lines 1-4], where verb interface can be interpret as virtual interface and [0051, lines 1-13], where each virtual lane has its own flow control and each VL has its own ID which could be relate to virtual interface number or ID and fiber channel ID can referred to as host channel adaptor element-300).

17. Claims 4-9, are rejected under 35 U.S.C. 103(a) as being unpatentable over Craddock and Pandya as applied to claims 1-3 above in view of Costello et al. (Pub. No.: US 2003/0078946 A1), hereinafter “Costello”.

18. As to claim 4, Craddock and Prakash disclose, the invention substantially as in parent claim 3. However, Craddock and Prakash are silent on wherein the set of peer connection information comprises a version number. Costello, however discloses, wherein the set of peer connection information comprises a version number (Costello, Abstract, lines 3-6, where version number is acquired by the leader node).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock and Prakash with the teachings of Costello in order to provide a cluster of computer system nodes share direct read/write access to storage devices via a storage area network using a cluster system (Costello, Abstract).

19. As to claim 5, Craddock, Pandya and Costello discloses, the invention substantially as in the parent claim 1 above, including, collecting from a set of clients, the set of client information (Costello, [0084, lines 1-13], where client configuration information is collected); and

transferring the collected set of client information to the cluster partner (Costello, [0084, lines 1-13], where server/cluster partner collects the client information).

20. As to claim 6, Craddock, Pandya and Costello discloses, the invention substantially as the parent claim 5, including, wherein the client information comprises a number of communication ports required (Costello, [0083, lines 1-9], where node could be interpret as communication port).

21. As to claim 7, Craddock, Pandya and Costello discloses, the invention substantially as the parent claim 5, including, wherein the set of client information further comprises an amount of memory requested by a particular client (Costello, [0069, lines 1-25, where each client carries a token which let him use the specific amount of memory from system memory or cache).

22. As to claim 8, Craddock, Pandya and Costello discloses, the invention substantially as the parent claim 1, including, wherein the cluster partner is a storage system (Craddock, Fig.1, element-116, [0009, lines 1-3], where SAN is a storage system).

23. As to claim 9, Craddock, Pandya and Costello discloses, the invention substantially as the parent claim 1, including, wherein the cluster partner is an application server (Costello, [0008, lines 1-6]).

24. Claims 20-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prakash in view of Sutherland et al. (Pub. No.: US 2002/0114341 A1), hereinafter "Sutherland" and further in view of Pandya.

25. As to claim 20, Prakash discloses, a peer process executing on each storage system partner having an operating system (Prakash, Col.3, lines 22-25, where to be aware of the status of peer systems a periodic polling is done which is equivalent to initiating a peer-to-peer communication and since this is a storage system it is obvious to have an operating system); and

establishing a reliable peer-to-peer connection between each peer process by connecting to a predetermined port number using a predetermined network address (Prakash, Col.3, lines 15-21, where peer-to-peer connection is setup between devices to transfer data without server intervention which also implicitly means bypassing the server operating system),

Prakash however is silent on disclosing explicitly, a cluster connection manager executing on each storage system partner, the cluster connection manager.

Sutherland however discloses, a cluster connection manager executing on each storage system partner, the cluster connection manager establishing a reliable peer-to-peer connection process by connecting to a predetermined port number using a predetermined network address(Sutherland, Abstract, lines 12-16, where, storage coordinator manager initiates and distributes the processing data among selected nodes, where selected nodes are equated to predetermined network address and port numbers for further detail please refer to [0035]);

Therefore, it would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Prakash with the teachings of Sutherland in order to provide a peer-to-peer storage system including a storage coordinator that centrally manages distributed storage resources in accordance with system policies administered through a central administrative console.

Prakash and Sutherland discloses implicitly the reliable peer-to-peer connection bypassing the operating system as explained above.

Pandya however discloses the concept explicitly as, connection bypassing the operating system as explained above (Pandya, Fig.10, [0101], where similar concept of bypassing the (Pandya, Fig.10, [0101], where upper layer protocol functions carry the traffic as well as other application that can benefit from direct OS TCP/IP, RDMA or network socket direct capabilities or combination thereof to utilize the high performance TCP/IP implementation of this processor).

Therefore, it would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Prakash and Sutherland with the teachings of Pandya in order to provide a classification of network traffic that consumes up to half of the processing cycles available on packet processors leaving few cycles for deep packet inspection and processing. IP based storage traffic by the nature of the protocol requires high speed low latency deep packet processing and therefore, implementing IP processor significantly reduces the classification overhead by providing a programmable classification engine.

26. Claims 24, 27-28 and 31 are rejected for the same rationale as applied to claim 20 above.

27. As to claim 21, Prakash, Sutherland and Pandya discloses, the invention substantially as in parent claim 20, including, wherein the reliable peer-to-peer connection is established without requiring a storage operating system executing on each storage system partner to be fully functioning (Sutherland, Abstract, lines 17-20],

where in operations are not interrupted if any of the cluster storage coordinators should fail).

28. As to claims 22, 25 and 29, Prakash, Sutherland and Pandya discloses, the invention substantially as in parent claims 20, 24 and 28, including, wherein the peer-to-peer connection is a virtual interface connection (Craddock, Fig.3A, [0050, lines 1-4], where verb interface is virtual interface)

29. As to claims 23, 26 and 30, Prakash, Sutherland and Pandya discloses, the invention substantially as in parent claims 20, 24 and 28, including, wherein the peer process is a cluster connection client that requests services from the cluster connection manager (Sutherland, Abstract, lines 14-47,where users requesting for files are clients).

30. Claim 32 is rejected under 35 U.S.C 103(a) as being unpatentable over Craddock, Prakash and Sutherland in view of “what was well known in the art”.

31. As to claim 32, Craddock discloses the invention substantially, including, wherein information comprises signal (Craddock, [0154], where signal is use to ensure all work completed successfully which is an information). Craddock however is silent on using heartbeat signal.

Official Notice (see MPEP ' 2144.03 Reliance on "Well Known" Prior Art) is taken that was well known in the art to get the advantage of having alert or warning system in place in parallel processing or cluster processing by using heartbeat signals e.g. processors status or job completed or request for another job. Examiner Further cites

heartbeat signals can also be use for newly added device detection in a parallel processing, Cluster environment and SAN system.

Therefore, it would have been obvious to one of skilled in the art at the time the invention was made to combine the teachings of Craddock, Prakash and Sutherland with "what is well known in the art" at the time the invention was made to provide a monitoring system in a cluster environment implementing the technique to update of poll the status of peer devices.

32. Claim 33 is rejected under 35 U.S.C 103(a) as being unpatentable over Craddock and Pandya in view of Boyd et al (Pub. No.: US 2004/0049600 A1), hereinafter “Boyd”.

33. As to claim 33, Craddock discloses the invention substantially including, initializing a first remote direct memory access read operation directed to a specific cluster partner, using a specific port number and a specific address that support RDMA operations (Craddock, Fig.1, [0135, lines 1-5], where attempt has made to read data and [0051, lines 1-13], where subnet manager is configuring physical ports and local address, which is used for read and write operations and Fig.1, [0009], where predefined is specific addresses for read and write defined before the read and write operation and further it is merely a well known teaching in the art that specific ports are used for specific traffic, e.g. http traffic go through port 80, LDP=389, Https=443, SIP=5060 etc),

Craddock however is silent on disclosing, "Performing a second RDMA read operations directed to a specific cluster partner, using a specific number and specific address that support a RDMA operation.

Pandya however discloses, performing a second RDMA read operations directed to a specific cluster partner, using a specific number and specific address that support a RDMA operations (Pandya, Fig.37, element-3706, 3708, [0142], where multiple read request is generated against a write command and it will be obvious therefore to repeat the read or write process according to Fig.37),

that bypasses the operation system (Pandya, Fig.10, [0101], where upper layer protocol functions carry the traffic as well as other application that can benefit from direct OS TCP/IP, RDMA or network socket direct capabilities or combination thereof to utilize the high performance TCP/IP implementation of this processor).

Therefore, using the rationale for read and write step above it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock with the teaching of Pandya in order to provide classification of network traffic that consumes up to half of the processing cycles available on packet processors leaving few cycles for deep packet inspection and processing. IP based storage traffic by the nature of the protocol requires high speed low latency deep packet processing and therefore, implementing IP processor significantly reduces the classification overhead by providing a programmable classification engine.

Craddock and Pandya however are silent on disclosing explicitly, virtual interface layers initialization.

Boyd however discloses, virtual addresses mapped to physical addresses via address translation table (Boyd, Fig.12, element-1206, 1216, 1214, [0113], where Address translation tables 1204 contain the information used to convert a virtual address provided in WQE data segment 1206 into a list of one or more real addresses of pages making up a data buffer within a memory region, such as memory region 1210),

Therefore it would have been obvious to one of ordinary skilled in art at the time the invention was made to combine the teachings of Craddock and Pandya with the teachings of Boyd in order to provide a method for accessing previously registered memory regions by incoming requests by utilizing a tag table to associate the request to with either a physical or virtual address.

34. Claim 34 is rejected under 35 U.S.C 103(a) as being unpatentable over Craddock, Pandya and Boyd in view of Sutherland.

35. As to claim 34 is rejected for same rationale as claim 33 above. In addition to the cited rationale for claim 33 above. Craddock, Pandya and Boyd however are silent on disclosing explicitly, peer-to-peer connection with a storage system having an operating system.

Sutherland discloses, peer-to-peer connection with a storage system having an operating system (Sutherland, Fig.1, Abstract, where peer to peer storage system is disclosed which obviously will have an operating system),

a cluster connection manager executing on the storage system (Sutherland , Fig.2, element-12, Abstract, where peer to peer storage system includes a storage coordinator performing the equivalent function of cluster connection manager that centrally manages distributed storage resources in accordance with system policies).

Therefore, it would have been obvious to one of the ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock, Pandya and Boyd with the teachings of Sutherland in order to provide a peer-to-peer storage system including a storage coordinator that centrally manages distributed storage resources in accordance with system policies administered through a central administrative console.

36. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references, as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in its entirety as potentially teaching of all or part of the claimed invention, as well as the context.

Conclusion

37. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Modi et al (Pub. No.: US 2004/0190533 A1, paragraph [0020]).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAUQIR HUSSAIN whose telephone number is (571)270-1247. The examiner can normally be reached on 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571 272 3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. H. /
Examiner, Art Unit 2452\

/Kenny S Lin/
Primary Examiner, Art Unit 2452